

"EXTRACT DEM"

USING ARCMAP

The purpose of the "Extract DEM" program is to retrieve either NCFMP or QL2 Lidar in gridded increments of 10'for products produced by NCDOT.

TABLE OF CONTENTS

| Getting Started | 2 |
|--|----|
| Creating Closed Polygons | 2 |
| Compressing A Design File | 4 |
| Deactivating GeoPak | 4 |
| Mapping network drive | 5 |
| Using ArcMap | 6 |
| First Time User Settings | 8 |
| Add Connection via Catalog | 12 |
| Running The "Extract Dem" Program | 14 |
| Combining Multiple ASCII files | 19 |
| Setting Active Level Attributes | 21 |
| Importing ASCII (.txt) Files Into Microstation | 23 |
| Converting Lidar From Gridded To Localized | 26 |
| Appendix A (NC Lidar STATUS Map) | 28 |

GETTING STARTED

It is beneficial to place the boundary (.dgn) file in an empty directory within the project file structure so there is no confusion once the ASCII (.txt) and (.dat) files are created. If more than one boundary exists such as in an Obscured Area file an ASCII (.txt) and (.dat) will be created for each and can be combined later (if needed) to import one file rather than multiple. The output location of the ASCII (.txt) and (.dat) file(s) <u>WILL BE</u> placed in the same location as the boundary (.dgn) file. Also, each boundary within the (.dgn) file must be a closed polygon in order for the "Extract DEM" program to intersect the NCFMP and/or QL2 Lidar data sets.

CREATING CLOSED POLYGONS

If the boundary is not a closed polygon it is necessary to create a closed polygon for each boundary within the (.dgn) file.

<u>NOTE:</u> If the boundary is already a closed polygon this step can be skipped and go directly to Using **ArcMap**.

Open the boundary (.dgn) file in Microstation. Select the **"Groups"** icon and then select **"Create <u>Reg</u>ion"**



Once the *Create Region* dialog box opens select "Flood". The Fill Type should be "None", check on "Keep Original", and select "Ignore Interior Shapes".



The active attributes should be different than the boundary attributes as this procedure will create the closed polygon on the active level.



"Data" inside each element. You will notice the element will highlight.

At this point, "data" again to accept. This will create a closed polygon for the boundary. This needs to be done for each element within the boundary (.dgn) file.



IMPORTANT: Be sure to compress the design file before exiting and deactivate GeoPak.

COMPRESSING A DESIGN FILE

This can be done by selecting **"File"**, **"Compress"**, then **"Design"** in the upper left corner of the *Microstation Design File Window*.

| The Fact structure | Setungs Loois | Utilities V | Vor <u>k</u> space | Applications | Window | NCDOT | Help |
|------------------------|---------------|-------------|--------------------|--------------|--------|--------|------------------|
| <u>N</u> ew | | | | | | Ctrl+N | |
| 💋 Open | | | | | | Ctrl+O | |
| Close | | | | | | Ctrl+W | 0 |
| <u>S</u> ave | | | | | | Ctrl+S | |
| Y Save <u>A</u> s | | | | | | | |
| Compress | | | | | | | • <u>D</u> esign |
| Sa <u>v</u> e Settings | | | | | | Ctrl+F | Options |
| A Item Browser | | | | | | | |

DEACTIVATING GEOPAK

In the top left portion of the Microstation Design File Select **"Applications"**, **"GEOPAK"**, then **"Deactivate GEOPAK"**.

If there is no option to deactivate GeoPak, then there is no need to do so.

| C:\Charles\test\u5605_Bare_Earth_Lidar.dgn [3D | - V8 DGN] - MicroStation V8i (SELECTseries | |
|--|--|--|
| | GEOPAK | |
| ਔ∦╱Ҳ≻╪᠉╜┐╴ | ROAD | |
| PAR View 1 - Default - Top PH Exist DT | M NCFMP LIDAR Elev SURVEY | |
| | WATER SEWER | |
| Attch Duad | LANDSCAPE Training | |
| | Element About GEOPAK | |

MAPPING NETWORK DRIVE

In order to connect to the location of the *"Extract DEM"* tool, the user may need to connect to a network drive. In a windows explorer window select **"Tools"** then **"Map network drive..."**



Using the drop down arrow next to "Drive" and choose the letter you wish to associate the mapped folder to. In the space next to Folder: type \\dot\DFSRoot01\Groups-PHCC\GeospatialData\lidar. Check on "Reconnect at login" and select "Finish"

| 🐐 Map Netwo | ork Drive | × |
|-------------|---|-------|
| 🔘 🍕 Mag | p Network Drive | |
| What n | etwork folder would you like to map? | |
| Specify | the drive letter for the connection and the folder that you want to connect to: | |
| Drive: | Z: | |
| Folder: | \\dot\dfsroot01\lidar | |
| | Example: \\server\share | |
| | Reconnect at logon | |
| | Connect using different credentials | |
| | Connect to a Web site that you can use to store your documents and pictures. | |
| | | |
| | | |
| | | |
| | | |
| | Finish Ca | ancel |

Once the network connection is made it will appear in the windows explorer window in order according to the letter chosen.



USING ARCMAP

First the user should open an instance of ArcMap either on their personal workstation or a vacant "shared" workstation.

This can be done one of 2 ways.

If the user has opened an instance of ArcMap recently it can be found by selecting the "Start" button in the lower left of the desktop then selecting "ArcMap"



If there's no option in the *recently opened* portion of the start window, once the user has selected the **"Start"** button, select **"All Programs"**, then navigate to and select **"ArcGIS"**. This will open more choices and the user should select **"ArcMap"**

| Control Panel Bentley Control Panel Devices and Printers Corpscon6 Devices and Printer Default Programs Google Chrome Default Programs Help and Support Help and Support Help and Support | Wicrosoft Word 2010 ArcMap 10.1 Microsoft Excel 2010 Paint Microsoft PowerPoint 2010 GeoExpress 9 PM Display Header WinZip 14.0 | Lee, Charles G Documents Pictures Music Computer | Accessorie ArcGIS ArcGIS Administrator ArcGIS Administrator ArcGlobe 10.1 ArcGlobe 10.1 ArcGIS for Desktop Help Desktop Tools Python 2.7 ArcGIS Explorer ArcGIS Workflow Manager Avery Dennison | Lee, Charles G Documents Pictures Music Computer |
|---|---|--|--|--|
| All Programs Help and Support Help and Support | | Control Panel Devices and Printers Default Programs | Bentley Bentley Multi-Install Corpscon6 Docudesk | Control Panel Devices and Printer |
| | All Programs | Help and Support | Back | Help and Support |

<u>NOTE:</u> Once the "Extract DEM" program is set to run, it cannot be minimized to work in the background while other tasks are continued. However, other programs may be opened in front of the ArcMap window to continue with other tasks.

Upon the opening of the ArcMap program, the following *ArcMap* - *Getting Started* window will appear. If so, select **"CANCEL"**

| xisting Maps R Recent Browse for more | ecent | | | |
|---|---------------|--|----------------|----------|
| -My Templates - Templates - Standard Page Sizes | Q | Q | Q | |
| Architectural Pac ISO (A) Page Siz North American (Traditional Layouts | QAQCD5Charles | QAQCD4Charles | QAQCD3Charles | |
| | | | Q | |
| | QAQCTemplete | NCDOT Emergency Response (Aerial Imagery) – 2014 Post | i5714_overview | |
| | | | | <u>•</u> |
| arles_D5\QAQCD5Charles.mxd | | | What | ie this? |
| Nisers\calee\Documents\ArcGIS | Default.gdb | | Wildt | |

Upon canceling the "ArcMap-Getting Started" window, the following "Add Data" window may also open: If so, select "Cancel"

| AddIns Web Maps | | | | |
|----------------------------|---|--|-----|--|
| Default.gdb Toolbox.tbx | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Name: | [| | Add | |

FIRST TIME USER SETTINGS

Once the user has opened an instance of ArcMap there are some settings that need to be changed **ESPECIALLY** if it's the first time opening the instance on a particular workstation for the use of this program.

First, the user should select "Geoprocessing" located along the top of the ArcMap window, then select "Geoprocessing Options"

| File Edit View Bookmarks Insert Selection | Geoprocessing lelp |
|---|---|
| □ □ | Buffer Clip Intersect Union Merge Dissolve Search For Tools ArcToolbox Environments Results ModelBuilder Python |

Once the user has completed making the same selections as in the following *Geoprocessing Options* illustration, select **"OK"**

| Overwrite the outputs of ge | oprocessing operations |
|--------------------------------------|---|
| Log geoprocessing operation | ns to a log file |
| Background Processing | |
| Enable Notification | |
| | Appear for how long (seconds) |
| | Stay up if Error occurs |
| Script Tool Editor/Debugger | |
| Editor: | 6 |
| Debugger: | |
| ModelBuilder | |
| When connecting elements, available. | display valid parameters when more than one i |
| Results Management | |
| Keep results younger than: | 2 Weeks |
| | |
| Display / Temporary Data | |
| Display / Temporary Data | g operations to the display fault |

Once again select the **"Customize"** option along the top of the *ArcMap window*, then select **"ArcMap Options"**

| File Edit View Bookmarks Insert Selection Geoprocessing | Customize |
|---|----------------|
| 🗋 🔂 🖨 🐇 🖄 🛍 🗙 🗠 🗠 🔂 🖸 | Toolbars + |
| ④ 즉 🖉 🎱 💥 🖸 🖛 🔶 💯 - 🖾 🖡 🚯 🥖 🗐 | Extensions |
| LP360 - Active LAS Layer: | Add-In Manager |
| Table Of Contents | Customize Mode |
| 🗽 🤤 😔 📳 🎦 | Style Manager |
| Javers | ArcMap Options |

Once "ArcMap Options" has opened, there are several settings to be changed in the ArcMap Options window.

| General | Data View | Layout View | Metadata | Tables | Raster |
|---------|----------------------|----------------------|-----------|--------------|-----------|
| CAD | Sharing | Display | Cache | Data Interop | erability |
| | iles | | | | |
| Б | camine all file exte | ensions | | | |
| lf the | abaals hay is ana | blad all file extern | iona will | | |
| be exa | amined for DGN | compliance. If disa | abled, | | |
| for dg | n compliance. | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Select the **"CAD"** tab and check on **"Examine all file extensions"**

Select the "General" tab and make the same changes as in the following illustration.

| | Display | Cache | Data Interop | erability |
|---|---|--|-------------------|-----------|
| ieneral Data View | Layout View | Metadata | Tables | Raste |
| Startup | | 105 | | |
| Show splash screen | | | | |
| Show Getting Started o | dialog | | | |
| ☑ Immediately add data | Sta | rtup Script: | | |
| Load last map on start. | up Ma | ap.Start | | |
| General | | | | |
| Make newly added laye | ers visible by def | ault | | |
| Return to last used loca | ation when Add | Data dialog firs | st used | |
| Show wizards when av | ailable | | | |
| Make relative paths the | e default for nev | v map documer | nts | |
| 20 22 | | | | |
| | | | | |
| 10015 | | | | |
| Default Layer for Identify | tool: | op-most layer > | | • |
| Default Layer for Identify | tool: <a>T | op-most layer: phlight feature: g graphic | s containing dick | able |
| Default Layer for Identify When the Hyperlink too content: Keep drawing tools act Mouse Wheel and Continue | tool: <a>T | op-most layer: phlight feature: g graphic | s containing dick | able |
| Default Layer for Identify When the Hyperlink too content: Keep drawing tools act Mouse Wheel and Continuo Roll Forward / Drag Up: | tool: <a>T ol is selected, hig ive after creatin ous Zoom/Pan To C Zooms In | op-most layer: phlight feature: g graphic pol | s containing dick | able |

Select the **"Sharing"** tab and make the same selections as in the following illustration. Then select **"Apply"** and **"OK"**

| eral Data View | Layout View | Metadata | Tables | Raster | |
|------------------------------|-------------------|------------------|---------------|----------|---|
| Sharing | Display Ca | ache | Data Interope | rability | |
| | | | | | |
| blishing | where your man | will be staged | when | | |
| blishing to ArcGIS Server.) | ou can override | this folder from | n an ArcGIS | | |
| rver Connection in Catalog | | | | | |
| aging Path: | | | | | |
| C:\Users\cglee\AppData\ | .ocal\Esri\Deskto | p10.1\Staging | · | 6 | |
| Use Default | | | | | L |
| | | | | | L |
| Show warning when cart | ne exceeds | | 500.0 | MB | |
| Chaw file lacetion where | aniaa deaftaan | ing definitions | 1 | | |
| show hie location when s | saving urant serv | ice definitions | | | |
| | | | | | |
| ckaging | | | | | |
| ts you choose to support th | ne ArcGIS Runtim | ne when packa | ging. | | |
| Enable ArcGIS Runtime T | ools | | | | |
| | | | | | |
| plications. | to unpack раска | ges for all Arcu | 15 Desktop | | |
| Automatically select loca | tion | | | | |
| * 11 | | | | | |
| Use user specified location | n | | | | |
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ADD CONNECTION VIA CATALOG

If the *Catalog window* is not open, select the "Windows" option along the top portion of the *ArcMap window* and select "Catalog"



Once the *Catalog window* has opened select the **"Add Connection"** option along the top of the window



Once the *Connect To Folder* window has opened navigate to the newly mapped network drive, ie; *lidar* (\\dot\dfsroot01) (Z:)

Highlight by selecting it then select "OK"



After the connection has been made to *"lidar* (*dot**dfsroot01*) (Z:)" expand by selecting the *"+"* next to the directory in the *Catalog* window. Then also select the *"+"* next to *"Extract_DEM.tbx"*. This allows the user access to the *"Extract DEM"* program.



RUNNING THE "EXTRACT DEM" PROGRAM

It is beneficial to place the boundary (.dgn) file in an empty directory so there is no confusion once the ASCII (.txt) files are created. If more than one boundary exists such as in an Obscured Area file an ASCII (.txt) will be created for each and can be combined later (if needed) to import one file rather than multiple. The output location of the ASCII (.txt) file(s) <u>WILL BE</u> placed in the same location as the boundary (.dgn) file. Also, each boundary within the (.dgn) file must be a closed polygon in order for the "Extract DEM" program to intersect the NCFMP and/or QL2 Lidar data sets.

SOME THINGS TO KEEP IN MIND:

- ✓ <u>REMINDER</u>: Once the "Get Lidar" program is set to run, it cannot be shrunk to work in the background while other tasks are continued. However, other programs may be opened in front of the ArcMap window to continue with other tasks. If the user has a large area it may be beneficial to run the program on a vacant shared workstation or set to run in the evening.
- ✓ The boundary *filename* <u>CAN NOT</u> contain any special characters, ie: the "&" symbol or "spaces".
- ✓ The directory structure of the boundary file location <u>CAN NOT</u> contain any special characters, ie: the "&" symbol or "spaces".



 ✓ When the "Get Lidar" program initiates it will extract QL2 Lidar first in the boundary area(s). If QL2 Lidar does not exist for that area it will then extract NCFMP Lidar. If a boundary falls in an area that has a mix of QL2 and NCFMP Lidar data sets, then separate ASCII (*.txt) files will be created for each type of Lidar within that particular boundary. To initiate the "Extract DEM" program double click "Extract DEM" in the Catalog window.



Once the "Extract DEM" window has opened, an Input Microstation Source must be selected, this is the boundary (.dgn) file. This is done by selecting the "Browse" button.

| 💐 Extract DEM | |
|---|--|
| S Extract DEM Input Microstation DGN DEM Spacing 10 | Extract DEM Tool to extract DEMs for anywhere in the state of North Carolina. The DEM spacing must be a multiple of 10. The input is a Microsoftation DCN with |
| | Microstation DGN with at least one closed shape (Polygon). Output is an ASCII XYZ file for the Microstation XYZ tool and a GEOPAK. DAT file to generate a TIN with. |
| | The area covered by the new QL2 Lidar from Phase I and Phase II is used. It has a tested Fundamental Vertical accuracy less than 0.5 feet. The remaining area of North Carolina is from the original |
| OK Cancel Environments << Hide Help | NCFMP Lidar. 2001,2003 and 2005 with the elevation Tool Help |

Navigate to the location of the boundary (.dgn) file and select it, then "Open"

| en | | | × |
|------------------------------------|---------------------------------|------------------|----------------|
| Look in: 🔒 B4840_Den | 10 | 💽 😧 😥 💽 | |
| Name 🔺 | 1 | ▼ Date modified | + Type |
| ジ 🛛 暮 b4840_limit | dgn | 6/5/2015 9:40 AM | Bentley Mic |
| Places | | | |
| | | | |
| sktop | | | |
| | | | |
| | | | |
| raries | | | |
| N | | | |
| puter | | | |
| | | | |
| | | | |
| bwork | | 1 | F |
| twork File name: | b4840_limit.dgn | | Open |
| twork File name: Files of type: | b4840_limit.dgn File (*.dgn) | | Open Cancel |

Next type in the value for the DEM spacing needed. Ie: 10. 20, 30, etc. (This value needs to be in multiples of 10) Then select **"OK"**.

| S Extract DEM | |
|-------------------------------------|---|
| Input Microstation DGN | Extract DEM |
| DEM Spacing 10 | Tool to extract DEMs for anywhere in the state of North Carolina. The DEM spacing must be a multiple of 10. The input is a Microstation DGN with at least one closed shape (Polygon). Output is an ASCII XYZ file for the Microstation XYZ tool and a GEOPAK .DAT file to generate a TIN with. The area covered by the new QL2 Lidar from Phase I and Phase II is used. It has a tested Fundamental Vertical accuracy less than 0.5 feet. The remaining area of North Carolina is from the original NCFMP Lidar. 2001,2003 |
| OK Cancel Environments << Hide Help | Tool Help |

Once the "Extract DEM" program has completed, the user will notice two files have been created. One with .txt extension for importing the lidar points in a design file and one with a .dat extension that can be used in GeoPak to create a tin file.

| ract DEM | × |
|---|------------|
| mpleted | Close |
| | |
| | << Details |
| Close this dialog when completed successfully | |
| Executing: ExtractDEM S:\Photo\CG_Lee\Extract_DEM_Demo\B4840_Demo\b4840_limit.dgn 10 | <u>.</u> |
| Start Time: Fri Jun 05 10:26:57 2015 | |
| Running script ExtractDEM | |
| Extracting a 10 foot spaced DEM for b4840_limit.dgn | |
| Creating Temporary storage Location JobName.gdb | |
| Temporary Feature dataset created in 7.44000005722 seconds. | |
| Converting b4840_limit.dgn into an ArcGis Feature Class. | |
| 1 polygon(s) were created in 30.6099998951 seconds. | |
| Polygon 1 is 25.0789716161 Acres with about 10924 points | |
| Starting to process these 20k tiles for polygon: 1 | |
| 226_052 | |
| Selection from DEM_226_052 completed in 41.9600000381 seconds. | |
| <pre>Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/B4840_Demo/b4840_limit_DEM_226_052_P1_10I</pre> | DEM.txt |
| Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/B4840_Demo/b4840_limit_DEM_226_052_P1_10I | DEM.dat |
| | |
| Completed SCript ExtractDem | |
| Succeded at fit oun 05 10.50.40 2015 (Frapsed Time: 5 MINUTES 51 Seconds) | |
| | |
| | - |

If a design file has more than one boundary such as obscured areas, the user will notice a .txt and .dat is created for each boundary and labeled P1, P2, P3, etc. and can be combined (see; **Combining Multiple ASCII Files**)

| act DEM | |
|--|---|
| npleted | Close |
| | |
| | << Details |
| | |
| Close this dialog when comp | leted successfully |
| | |
| 7 polygon(s) were | created in 27.3299999237 seconds. |
| Polygon 1 is | 0.5086642447 Acres with about 221 points |
| Startin | g to process these 20k tiles for polygon: 1 |
| 126 096 | |
| _ Se | lection from DEM 126 096 completed in 51.4100000858 seconds. |
| | Exported: S:/Photo/CG Lee/Extract DEM Demo/R2519e obscure Demo/r2915e obscured areas DEM 126 096 P1 10DEM.txt |
| | Exported: S:/Photo/CG Lee/Extract DEM Demo/R2519e obscure Demo/r2915e obscured areas DEM 126 096 P1 10DEM.dat |
| Polygon 2 is | 0.497125319102 Acres with about 216 points |
| Startin | g to process these 20k tiles for polygon: 2 |
| 126_096 | |
| Se | lection from DEM 126 096 completed in 41.1999998093 seconds. |
| | Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/R2519e_obscure_Demo/r2915e_obscured_areas_DEM_126_096_P2_10DEM.txt |
| | Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/R2519e_obscure_Demo/r2915e_obscured_areas_DEM_126_096_P2_10DEM.dat |
| Polygon 3 is | 0.264283179513 Acres with about 115 points |
| Startin | g to process these 20k tiles for polygon: 3 |
| 126_096 | |
| Se | lection from DEM 126 096 completed in 41.6900000572 seconds. |
| | Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/R2519e_obscure_Demo/r2915e_obscured_areas_DEM_126_096_P3_10DEM.txt |
| a an | Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/R2519e_obscure_Demo/r2915e_obscured_areas_DEM_126_096_P3_10DEM.dat |
| Polygon 4 is | 0.524864769288 Acres with about 228 points |
| Startin | g to process these 20k tiles for polygon: 4 |
| 126_096 | |
| Se | lection from DEM 126 096 completed in 41.4100000858 seconds. |
| | Exported: S:/Hoto/CG_Le/Extract_DEM_Demo/R2519e_Obscure_Demo/r2515e_Obscured_areas_DEM_126_096_P4_10DEM.txt |
| Delenar C de | Exported: S:/Photo/CG_Lee/Extract_DEM_Demo/R2519e_obscure_Demo/r2915e_obscured_areas_DEM_126_096_P4_10DEM.dat |
| Polygon 5 18 | 2. TO DECEMPT ACTES WILL ADOUT 1040 DOINTS |
| 126 006 | g to process these zok tites for porygon; s |
| 120_090 | lection from DEM 126 096 completed in 41 410000858 seconds |
| De | receion from ben 120-050 compreted in 41.4100000000 Beconds. |

To exit the "Extract DEM" program, simply select "Close" on the Extract DEM window



To exit ArcMap, select "File" along the top of the ArcMap window and "Exit"

| File | Edit View Bookr | narks Insert | Selectio |
|------|-----------------------|----------------|----------|
| P | New | Ctrl+ | HN + |
| A | Open | Ctrl+ | -o |
| | Save | Ctrl+ | +S |
| | Save As | | |
| | Save A Copy | | - 8 |
| | Share As | | + |
| | Add Data | | + 7 |
| | Sign In | | 6 |
| | ArcGIS Online | | |
| | Page and Print Setup. | | 5 |
| | Print Preview | | 4 |
| 9 | Print | | |
| | Export Map | | 3 |
| | Analyze Map | | 2 |
| 6 | Map Document Proper | ties | |
| | 1 C:\Charles\QAQC | D5Charles.mxd | 1 |
| | 2 C:\Charles\QAQC | D4Charles.mxd | 7 |
| | 3 C: \Charles \QAQCD3 | Charles.mxd | 7 |
| | 4 S: \Photo \CG \QAQ | CTemplete.mxd | ſ |
| | 5 WCDOT Emergen | cy Response | 6 |
| | 6 I:\Special_P\5714 | 1_overview.mxd | 6 |
| | / S:\Photo\C\5714 | _overview.mxd | |
| | a C: Georech_SOP (te | st.mxa | 5 |
| | SC: LIDAR GET_LIDAR | DXIII. | 5 |
| | Exit | Alt+f | -4 |

When asked to save changes select "No"



COMBINING MULTIPLE ASCII FILES

If multiple ASCII files were created because of multiple boundaries within the boundary file, they can be imported into one file so as to reduce the amount of time of importing one file vs multiple files in Mircostation.

NOTE: If one ASCII file was created, these steps can be skipped and go directly to Importing ASCII (.txt) Files into Microstation.

In Windows Explorer hold the shift key down while right clicking on the directory that contains the ASCII (.txt) files and select **"Open command window here"**

| Char | Open Open in new process | |
|----------------|---|---|
| 🔒 Char | Open in new window | |
| ル d938 | Open command <u>w</u> indow here | |
| 📙 Data | S <u>h</u> are with Snagit | |
| | Scan for threats | |
| LiDAI | 및 WinZip 회 Shared Folder Synchronization | • |
| MrSic MrSic | Restore previous <u>v</u> ersions <u>I</u> nclude in library Copy <u>a</u> s path | • |
| | Se <u>n</u> d to | • |
| | Cu <u>t</u> <u>C</u> opy | |
| NCSH Orth | Create <u>s</u> hortcut <u>D</u> elete | |
| Jeft Jeft | Rename Properties | - |

An "MS DOSS" command window will appear. At the prompt type the following;

<u>.txt</u> Copy [space] *.txt [space] "name of file".txt <u>le: copy *.txt nameoffile.txt</u> Press **"Enter"**

Or

<u>.dat</u>

Copy [space] *.dat [space] "name of file".dat <u>le: copy *.dat nameoffile.dat</u> Press "Enter"

| Administrator: C:\Windows\system32\cmd.exe | |
|---|---|
| S:\Photo\CG_Lee\Extract_DEM_Demo\R2519e_obscure_Demo>copy *.txt dem.txt r2915e_obscured_areas_DEM_126_096_P1_10DEM.txt r2915e_obscured_areas_DEM_126_096_P2_10DEM.txt r2915e_obscured_areas_DEM_126_096_P3_10DEM.txt r2915e_obscured_areas_DEM_126_096_P4_10DEM.txt r2915e_obscured_areas_DEM_126_096_P5_10DEM.txt r2915e_obscured_areas_DEM_126_098_P6_10DEM.txt r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt | |
| S:\Photo\CG_Lee\Extract_DEM_Demo\R2519e_obscure_Demo>copy *.dat dem.dat r2915e_obscured_areas_DEM_126_096_P1_10DEM.dat r2915e_obscured_areas_DEM_126_096_P2_10DEM.dat r2915e_obscured_areas_DEM_126_096_P3_10DEM.dat r2915e_obscured_areas_DEM_126_096_P5_10DEM.dat r2915e_obscured_areas_DEM_126_098_P6_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat | |
| S:\Photo\CG_Lee\Extract_DEM_Demo\R2519e_obscure_Demo> | - |

The "filename" (ie: dem.txt and dem.dat) will be saved in that directory.

| Name | Date modified | Туре * | Size |
|--|-------------------|---------------------|--------|
| 길 JobName.gdb | 6/5/2015 10:53 AM | File folder | |
| 🐺 r2915e_obscured_areas.dgn | 6/4/2015 8:49 AM | Bentley MicroStatio | 121 KB |
| dem.dat | 6/5/2015 11:51 AM | DAT File | 111 KB |
| r2915e_obscured_areas_DEM_126_096_P1_10DEM.dat | 6/5/2015 10:43 AM | DAT File | 11 KB |
| r2915e_obscured_areas_DEM_126_096_P2_10DEM.dat | 6/5/2015 10:44 AM | DAT File | 11 KB |
| r2915e_obscured_areas_DEM_126_096_P3_10DEM.dat | 6/5/2015 10:46 AM | DAT File | 6 KB |
| r2915e_obscured_areas_DEM_126_096_P4_10DEM.dat | 6/5/2015 10:48 AM | DAT File | 11 KB |
| r2915e_obscured_areas_DEM_126_096_P5_10DEM.dat | 6/5/2015 10:49 AM | DAT File | 50 KB |
| r2915e_obscured_areas_DEM_126_096_P7_10DEM.dat | 6/5/2015 10:52 AM | DAT File | 4 KB |
| r2915e_obscured_areas_DEM_126_098_P6_10DEM.dat | 6/5/2015 10:50 AM | DAT File | 14 KB |
| r2915e_obscured_areas_DEM_126_098_P7_10DEM.dat | 6/5/2015 10:53 AM | DAT File | 7 KB |
| 🗑 dem.txt | 6/5/2015 11:51 AM | Text Document | 104 KB |
| r2915e_obscured_areas_DEM_126_096_P1_10DEM.txt | 6/5/2015 10:43 AM | Text Document | 11 KB |
| r2915e_obscured_areas_DEM_126_096_P2_10DEM.txt | 6/5/2015 10:44 AM | Text Document | 10 KB |
| r2915e_obscured_areas_DEM_126_096_P3_10DEM.txt | 6/5/2015 10:46 AM | Text Document | 6 KB |
| r2915e_obscured_areas_DEM_126_096_P4_10DEM.txt | 6/5/2015 10:48 AM | Text Document | 11 KB |
| r2915e_obscured_areas_DEM_126_096_P5_10DEM.txt | 6/5/2015 10:49 AM | Text Document | 47 KB |
| r2915e_obscured_areas_DEM_126_096_P7_10DEM.txt | 6/5/2015 10:52 AM | Text Document | 4 KB |
| r2915e_obscured_areas_DEM_126_098_P6_10DEM.txt | 6/5/2015 10:50 AM | Text Document | 13 KB |
| r2915e_obscured_areas_DEM_126_098_P7_10DEM.txt | 6/5/2015 10:53 AM | Text Document | 6 KB |

To obtain a command window when using Windows 10, navigate to the directory the .txt and .dat files reside, select the address bar at the top of the windows explorer so that the entire address is highlighted and type "**cmd**" then enter. Once the command window appears follow the directions starting at the bottom of page 19.

NOTE: Before Importing Coordinates be sure to set the Active Level attributes to the corresponding type of Lidar being imported.

NCFMP - PH Exist DTM NCFMP LIDAR Elevation Point (Level #16016)

QL2 - PH Exist DTM QL2 Lidar Elevation Point (Level #16306)

SETTING ACTIVE LEVEL ATTRIBUTES

Select the "Level Display" icon



In the Level Display window, select the "List Filter" icon and set to "Untitled"

| | 🥩 Level Display - View 1 | | | | <u>_</u> _× |
|--------------------------------|--------------------------------------|--------|---|------|-------------|
| | 🕗 🙀 View Display 🔻 | | | | |
| | | | | | |
| tction | | | | | |
| (none) | r2915e_obscured_areas.dgn | | | | |
| Untitled | | | | | |
| All Levels | | | | | |
| DTM Level Names Containing DTM | | | | | |
| DTM Triangulated Features | | | | | |
| DTM Breaklines and Spots | | | | | |
| DTM Breaklines only | | | | | |
| DTM Spots only | [N | N I | | = | // . |
| No Cogo Information | Name | Number | | Used | · (0) |
| PH Boundary and Property | Default | 0 | 0 | 0 • | 17_ |
| PH Buildings and Other Culture | Typical Text Label CELL | 675 | 0 | 0 | |
| PH County Map Aviation | Typical Text ID Circle CELL | 674 | 0 | 0 | |
| PH County Map Boundary | Typical Text Grade Point CELL | 673 | 0 | 0 | |
| City Limit | Typical Text General CELL | 672 | 0 | O | |
| State and County | Typical Text Centerline CELL | 671 | Ő | | |
| PH County Map Civil | Turical Test Asshalt at Bridge Asses | 670 | | o | |
| Demographics | Trainal Transition of CLU | 0/0 | | | |

Select the Blank Area at the top of the *Level Name* window and type **"lidar"**, then press the **"Enter"** button on your keyboard. This will display only the levels that correspond to Lidar.

| 🥩 Level Display - View 1 | | | | | |
|----------------------------------|--------|-----|---|------|--------|
| 🖓 🙀 View Display 🔻 | | | | | |
| Vintitle - Levels | - 🖂 - | | | | |
| 🔞 r2915e_obscured_areas.dgn | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| A News | Maria | | = | Und | 77 |
| lidar | Number | | | Used | ro |
| PH Exist DTM QL2 LIDAR Elevation | 16306 | 6 | · | 3 | |
| PH Exist DTM NCFMP LIDAR Elevat | 16016 | 156 | | 3 | |
| | | | | | |

"Right Click" with your mouse on the appropriate Lidar Level and select "Set Active"

| 🥩 Level Display - Vi | iew 1 | | | | | |
|----------------------|---------------------|------------|---|---|------|---|
| U View Dis | splay 🔻 | | | | | |
| ¥ 🗄 🕨 🗤 | ntitle 🔻 Levels 🔻 🔀 | a • | | | | |
| 🜃 r2915e_obscured_a | areas.dgn | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Name | | Number | F | E | Used | 8 |
| lidar | | | 5 | | | |
| PH Exist DTM QL2 LID | AR Elevation Point | 16306 | 6 | | | |
| PH Exist DTM NCFMF | Set <u>A</u> ctive | _ | | | | |
| | Jump To Active Leve | 1 | | | | |
| | Create Display Set | | | | | |
| | All On | | | | | |
| | All Off | | | | | |
| | _ Invert On/Off | | | | | |
| - | Off By Element | | | | | |
| | All Except Element | | | | | |
| | Save Filter | | | | | |
| | Level Manager | | | | | |

To return your Level Display window to show all levels, select the "List Filter" then "None"



IMPORTING ASCII (.TXT) FILES INTO MICROSTATION

Once the ASCII file(s) has been created it can be imported using the *Import Coordinates* tool in the *XYZ Text* toolbox.

Open the boundary file in *Microstation*. Select the **"Tools"** option along the top of the *Microstation* window, select **"Dimensions"**, select **"XYZ Text"**, then **"Open as Toolbox"**.



Select "Import Coordinates"



In the Import Coordinates dialog box, select "Browse"

| me: | numates | Browse | |
|---------|---------------|--------|--|
| Import: | Point Element | | |
| Order: | XYZ | | |
| View: | 1 | | |
| Text: | | | |
| Cell | | | |

In the Open Import File dialog box, browse to the location of the .txt file.

Select the ASCII file

ie: b4840_limit_DEM_226_052_P1.txt or the combined file *dem.txt*,

| Look in: | B4840_Dem | 10 | - G 💋 E | 🤊 🛄 - | 3 |
|-----------|--------------|----------------------|------------------|----------------------|-----------|
| 1 | Name 🔺 | | ↓ Date modif | ied 🖌 Type | ▼ Size |
| | JobName.go | lb | 6/5/2015 1 | 10:30 AM File folder | |
| nt Places | b4840_limit_ | DEM_226_052_P1_10DEM | 1.txt | rt Docume | ent 480 I |
| | | | | | |
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| зкюр | | | | | |
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| oraries | | | | | |
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| mputer | | | | | |
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| etwork | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | File name: | b4840_limit_DEM_226 | _052_P1_10DEM.bd | | Оре |

then "Open".

Select "Process"

| 🐐 Import Coordinates | | |
|----------------------|--------------------------------------|--|
| P_Bare_Earth.txt | Browse | |
| Point Element | | |
| XYZ | | |
| 1 | | |
| | | |
| | | |
| | P_Bare_Earth.txt Point Element XYZ 1 | |

The ASCII file will be imported into your design file with the attributes of the active level.

Repeat the steps above for each ASCII file created making sure the correct active level is set for the type of Lidar being imported.

CONVERTING LIDAR FROM GRIDDED TO LOCALIZED

Once the Lidar has been imported into your **3D** Microstation file on the correct active level and attributes, it is necessary to convert it to Localized Coordinates as the Lidar is in a Gridded Coordinate System.

At the top of your Microstation Design File window select **"Tools"**, **"Photogrammetry Tools"** and **"Photogrammetry_DGN Transformation"**



Select the "Grid Loc" icon



Select "Grid To Local", "Combined Scale Factor", and then enter in the Scale Factor information and the Localization Point Northing and Easting and select "Process"

| Conversion Type Grid to Local C Local to Grid | |
|---|--|
| Grid to Local C Local to Grid | |
| C Local to Grid | |
| | |
| Scale Parameters | |
| Scale Type | |
| 📀 Combined Scale Factor | |
| C Site Scale Factor | |
| Scale Factor | |
| 0.999776365 | |
| Localization Point | |
| Northing (Y) | |
| 549659.060 | |
| Easting (X) | |
| 890019.230 | |
| Exit Process | |

The information needed to enter into the Scale Factor information and the Localization Point Northing and Easting can be found in the header information at the top of the unedited control file as in the image below.

| File Edit Form | at view Heip | tad by LaclE ylt | for Even i vi | |
|--|---|--|--|----------|
| Project: 38 | 593.1.2 | Localiz | red By: R.D. McDonald | <u> </u> |
| TIP: B-4823 Date: 1/10/2012 Horz Datum: NAD83(NSR52007) Vert Datum: NAVD88 Geoidal Model: GO9NC Svstem: Local | | Combine Holding Northir Easting NAVD88 Units f | (F): 549659.060 (F): 549659.060 (F): 890019.230 (F): 2118.820 | |
| Point # | Easting | Northing | Elev. | |
| G101 G102 P001 P002 P003 P004 P005 P006 P007 P008 | 89019.230 890154.159 889674.595 890143.335 890756.744 890826.856 889983.198 891115.882 890516.920 890299.364 | 549659.060 550255.332 549127.533 549231.927 548821.927 548861.273 550849.706 551260.443 551589.097 551541.100 | 2118.820 2117.750 2120.380 2160.581 2278.888 2118.047 2110.657 2209.711 2140.736 2111.213 | |